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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/507,069   | 03/22/2005  | Yong-Soo Park        | LEE.018             | 2661             |
| 20/987 7590 08/12/2008<br>VOLENTINE & WHITT PLLC<br>ONE FREEDOM SQUARE<br>11951 FREEDOM DRIVE SUITE 1260<br>RESTON, VA 20190 |             |                      |                     |                  |
| EXAMINER   |             |                      |                     |                  |
| IP, SIKYIN   |             |                      |                     |                  |
| ART UNIT   |             | PAPER NUMBER         |                     |                  |
| 1793   |             |                      |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/507,069

**Applicant(s)**

PARK ET AL.

**Examiner**

Sikyin Ip

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 1/22/08; 2/21/08; 6/2/08.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-17 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/ISD)  
4) ☐ Interview Summary (PTO-413)  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_  
Paper No(s)/Mail Date \_\_\_\_\_

## DETAILED ACTION

### *Specification*

The disclosure is objected to because of the following informalities: In page 1, lines 10, <sup>10</sup> workability by suppressing formation of intermetallic phases, such as sigma (σ) and \_\_\_\_\_ and page 9, line 24, <sup>25</sup> intermetallic phases such as sigma (σ) and chi (χ) showing detrimental effects on corrosion resistance, embrittlement resistance, castability and hot workability, and \_\_\_\_\_, the expression "sigma (Θ)" in said pages is found inconsistent with conventional symbol "σ" as disclosed in abstract.

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### **Claim Rejections - 35 USC § 103**

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR

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1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 and 5-17 are rejected under 35 U.S.C. § 103 as being unpatentable over USP 5298093 to Okamoto (PTO-1449) in view of SU 1148893, USP 4735771 to Corwin, or WO01057280.

Okamoto discloses the features including duplex stainless steel composition (col. 2, lines 42-55), PREW value (col. 2, lines 57-61), ferritic and austenitic phases volume ratio (col. 8, lines 5-7), and suppressing formation of sigma and khi phases (col. 2, lines 1-32). The difference between the reference(s) and the claims are as follows: Ba alloying element and solubility of MM, Y, Al, O, and/or S. However, SU 1148893 (abstract), Corwin (paragraph between col. 1-2, and col. 4, lines 19-28), or WO01057280 (paragraph bridging pages 3-4 and page 5, lines 10-30) discloses Ba among other oxide forming elements in the same field of endeavor or the analogous metallurgical art for improving machinability and oxide forming. Therefore, it would have been obvious to one having ordinary skill in the art of the cited references at the time the invention was made to provide Okamoto with Ba as taught by SU 1148893, Corwin, or WO01057280 because the set forth benefits and function entail the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties. It has been held that combining known ingredient having known functions, to provide a composition having the additive effect of each of the known functions is within realm of performance of ordinary skill artisan. In re Castner, 186 USPQ 213 (217). The use of conventional materials to perform their

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known functions in a conventional process is obvious. In re Raner, 134 USPQ 343 (CCPA 1962).

With respect to the solubility as recited in instant claims 5-7, that solubility is material property which would have been inherently possessed by the material of cited references. With respect to instant claim 13, that since the composition and duplex phases ratio of instant claimed are overlapped by alloy steel of Okamoto. The value as set forth in claim 13 would have been overlapped. Therefore, the burden is on the applicant to prove that the product of the prior art does not necessarily or inherently possess characteristics attributed to the claimed product.

In re Best, 195 USPQ, 430 and MPEP § 2112.01.

"Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best, 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best, 195 USPQ 430, 433 (CCPA 1977)."

Claims 4-17 are rejected under 35 U.S.C. § 103 as being unpatentable over USP 5298093 to Okamoto (PTO-1449).

Okamoto discloses the features including duplex stainless steel composition (col. 2, lines 42-55), PREW value (col. 2, lines 57-61), ferritic and austenitic phases volume ratio (col. 8, lines 5-7) and suppressing formation of sigma and khi phases (col. 2, lines 1-32). The difference between the reference(s) and the claims are as follows: Okamoto

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does not disclose solubility of MM, Y, Al, O, and/or S. However, the solubility as recited in instant claims 5-7, that solubility is material property which would have been inherently possessed by the material of cited references. With respect to instant claim 13, that since the composition and duplex phases ratio of instant claimed are overlapped by alloy steel of Okamoto. The value as set forth in claim 13 would have been overlapped. Therefore, the burden is on the applicant to prove that the product of the prior art does not necessarily or inherently possess characteristics attributed to the claimed product.

In re Best, 195 USPQ, 430 and MPEP § 2112.01.

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### ***Response to Arguments***

Applicant's arguments filed June 2, 2008 and January 22, 2008 have been fully considered but they are not persuasive.

~~Applicants however respectfully submit that none of the above noted rules or MPEP sections require that an applicant identifies support in an application for amendments made to claims. The above noted rules and MPEP sections mentioned~~

But, applicants' attention is directed to 37 C.F.R. § 41.37 (c )(1)(v), for example, which is pasted below:

(v) Summary of claimed subject matter

A concise explanation of the subject matter defined in each of the independent claims involved in the appeal, which shall refer to the specification by page and line number, and to the drawing, if any, by reference characters. For each independent claim involved in the appeal and for each dependent claim argued separately under the provisions of paragraph (c)(1)(vii) of this section, every means plus function and step plus function as permitted by 35 U.S.C. 112, sixth paragraph, must be identified and the structure, material, or acts described in the specification as corresponding to each claimed function must be set forth with reference to the specification by page and line number, and to the drawing, if any, by reference characters.

37 C.F.R. § 41.37 (c )(1)(v) requires subject matter that is defined in claims shall refer to specification by page and line number when applicants appeal a rejection.

Since support of claimed subject matter is required by Board of Patent Appeals and Interferences, it is also essential to examiners during prosecution. Moreover, page 1, page 13, lines 1-3, and page 15, lines 10-11 do not support "suppressing formation of intermetallic phases including sigma and khi phases. For example, page 13, that

and Cr environment, and also improves corrosion resistance and mechanical properties by delaying a precipitation speed of brittle sigma and khi phases after sensitization heat-treatment or welding. However, W is a high-priced alloying , in which "delaying a precipitation speed of ... sigma and khi phases" is not the same as suppressing formation of intermetallic sigma and khi phases. Furthermore, the inconsistency of the

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expression "sigma (O)" in page 1, line 10 and page 9, line 24 of instant specification with "sigma ( $\sigma$ )" in claims 1 and 4 is confusing.

As is requested by applicants that the "Notice of Non-Compliant Amendment" has been withdrawn.

Applicants argue that Okamoto adds W instead of Ba (claim 1), and MM and/or Y (claim 4) as claimed to suppress sigma and khi phases. First, among the alkaline earth metals (Be, Mg, Ca, Sr, and Ba), Okamoto teaches to add Mg and Ca (col. 7, lines 35-45). Second, Ce (MM) is taught by Okamoto (paragraph bridging col. 7-8). Nonetheless, claimed steel compositions have been overlapped by steel compositions of cited references and suppressing sigma and khi phases also has been taught by Okamoto.

~~However,~~ Applicants have not argued on pages 10-11 of the Amendment dated July 13.

Applicants argue that " 2007, that W content is critical. ~~The Examiner has misunderstood and has failed to~~ "

~~to increase the hot workability of the steel by fine sulfur reserves. The duplex stainless steel of the present invention has good hot workability in itself due to a low S content and the nature of W, which does not serve to accelerate the formation of  $\alpha$ - and similar phase although added in a large amount.~~ "

But as quoted from said argument "

that applicants have argued the benefit of the instant claimed S and W elements.

~~as in the examples.~~ According to the present invention, additionally added Ba, MM and/or Y can actively suppress the formation of intermetallic phases under the above

Applicants argue that " mentioned mechanism. " But,

alkaline earth metals such as Mg and Ca and MM such as Ce have been taught by Okamoto (Col. 7, lines 35-45 and col. 7, line 68 – col. 8, line 1). Furthermore, there is no factual evidence to show claimed Ba and MM and/or Y contents are critical and possessed unexpected results.



Applicants argue that the pitting tests in Okamoto are done differently from pitting tests disclosed in instant specification. But, the PREW values in instant claims and in Okamoto are defined in terms of alloy elements and their composition not the testing conditions.

Applicants argue that WO 01/57280, SU 1148893, Okamoto, and Corwin add Ba for different purpose. The fact that applicants have recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Applicants' argument with respect of WO 01/57280 in page 13 of 15 of instant remarks is noted. But, WO 01/57280 does teach add Ba to ferritic and austenitic steels.

Applicants' argument with respect to REM in Okamoto is noted. But, addition of MM to duplex stainless steel has been taught and the instant claimed MM content is overlapped by the teaching of Okamoto.

Applicants emphasize that the above noted finding is why the high-grade duplex stainless steel of claims 1 and 4 show extremely superior corrosion resistance as compared to the steels disclosed in the Okamoto reference as mentioned above. That is, Ba, MM and/or Y (and their oxides and sulfides, etc.) can actively suppress the formation of intermetallic phases even though much more intermetallic phase formation elements (Cr, Mo, Si or W) may be included.

But, Ba, MM and/or Y have been taught by references of record. Applicants have not provide factual evidence to substantiate their position that the claimed Ba, MM and/or Y contents are critical and possessed unexpected results.

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The WO 01/57280 reference is not directed to duplex stainless steel, but more particularly to grain refining alloy for steel. "Grain Refining" means reducing sizes of grain of the steel matrix. The material is FeXY. X may be Cr, Mn, Si, Ni and Mo, and Y may be Ca, La, Nd, Pr, Ti, Al, Zr, Ce, Ba, Sr, Mg, C and N. Therefore, the basic compositions are quite different from the present application. ~~This material is added to.~~ "

Applicants argue that "

Contrarily to applicants' argument, WO 2001057280 is directed to improve ferritic and austenitic steels (see page 1, lines 5-10).

## Conclusion

Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

## Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Ip whose telephone number is (571) 272-1241. The examiner can normally be reached on Monday to Thursday from 5:30 A.M. to 4:00 P.M.

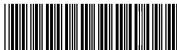
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King, can be reached on (571)-272-1244.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sikyin Ip/  
Primary Examiner, Art Unit 1793

August 10, 2008

**Application Number****Application/Control No.**

10/507,069

**Applicant(s)/Patent under  
Reexamination**

PARK ET AL.

**Examiner**

Sikyin Ip

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